

ABSTRACT

A frequency translating device (FTD) includes at least one mixer diode connected to down-convert a radio frequency (RF) to an intermediate frequency (IF) and to up-convert an IF to an RF and a source of direct current (DC) bias that is connected to the mixer diode. The source of DC bias provides DC bias to the mixer diode that moves the voltage applied to the mixer diode closer to the threshold voltage of the mixer diode. The mixer diode is turned on in response to the DC bias and a local oscillator (LO) drive. Because DC bias is applied to the mixer diode, the peak to peak voltage range of the LO drive can be reduced, thereby reducing the voltage-dependent capacitance of the mixer diode, causing the FTD to exhibit improved reciprocity. The FTD can be used in a three-pair measurement system to determine the conversion response of another FTD.